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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,656	09/18/2001	Georg Friedrich Gaertner	DE000145	7505

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
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BRIARCLIFF MANOR, NY 10510

EXAMINER

SANTIAGO, MARICELI

ART UNIT PAPER NUMBER

2879

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

☆

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/954,656	GAERTNER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Mariceli Santiago	2879	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 6 and 8 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

The Amendment, filed on April 15, 2004, has been entered and acknowledged by the Examiner.

Claims 1-9 are pending in the instant application.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Derks et al. (US 5,075,589).

Regarding claim 1, Derks discloses a cathode ray tube provided with at least one oxide cathode (Fig. 1) comprising a cathode carrier with a cathode base (7) of a cathode metal and a cathode coating of an electron-emitting material (2) containing a particle-particle composite material of oxide particles of an alkaline earth oxide selected from the group formed by the oxides of calcium, strontium and barium (Column 2, lines 49-52), and oxide particles having a first grain size distribution of an oxide selected from the group formed by the oxides of scandium, yttrium and the lanthanoids (Column 2, lines 27-29,  $d_{50} > 0.9\mu\text{m}$ ), and oxide particles having a second grain size distribution of an oxide selected from the group formed by the oxides of scandium, yttrium and the lanthanoids (Column 2, lines 27-29,  $d_{50} \leq 0.9\mu\text{m}$ ).

Regarding claim 2, Derks discloses a cathode ray tube wherein the oxide particles having the first grain size distribution have an average grain size  $d_{50} > 0.9\mu\text{m}$  (Column 2, lines

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27-29, i.e., the value falls within the claimed size distribution of  $0.4 < d_{50} < 5\mu\text{m}$ ), and the oxide particles having the second grain size distribution have an average grain size  $d_{50} \leq 0.9\mu\text{m}$  (Column 2, lines 27-29, i.e., the value falls within the claimed size distribution of  $d_{50} < 0.4\mu\text{m}$ ),

Regarding claim 9, Derks discloses an oxide cathode (Fig. 1) comprising a cathode carrier with a cathode base (7) of a cathode metal and a cathode coating of an electron-emitting material (2) containing a particle-particle composite material of oxide particles of an alkaline earth oxide selected from the group formed by the oxides of calcium, strontium and barium (Column 2, lines 12-19), and oxide particles having a first grain size distribution of an oxide selected from the group formed by the oxides of scandium, yttrium and the lanthanoids (Column 2, lines 27-29,  $d_{50} > 0.9\mu\text{m}$ ), and oxide particles having a second grain size distribution of an oxide selected from the group formed by the oxides of scandium, yttrium and the lanthanoids (Column 2, lines 27-29,  $d_{50} \leq 0.9\mu\text{m}$ ).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derks et al. (US 5,075,589).

Regarding claim 3, Derks fails to disclose the limitation the oxide particles having first grain size distribution in a concentration in the range from 0.1 to 20 wt%, and the oxide particles having the second grain size distribution in a concentration in the range from  $1 \cdot 10^{-6}$  to  $1 \cdot 10^{-3}$

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wt.%. However, Derks exemplifies the addition of oxide particles to the emissive layer in a range of 0.1-1.3wt.% (Column 2, lines 52-58), and the particles size distribution being in a range of about half the particles with  $d_{50} > 0.9\mu\text{m}$  and about the other half with  $d_{50} < 0.9\mu\text{m}$ . Moreover, Derks recognizes the relationship and further optimization of the particles wt.% in relation to the particle size, particularly, the fact that for smaller particle sizes a smaller wt.% of those particles are required (Column 1, lines 48-52). It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the oxide particles having first grain size distribution in a concentration in the range from 0.1 to 20 wt%, and the oxide particles having the second grain size distribution in a concentration in the range from  $1 \times 10^{-6}$  to  $1 \times 10^{-3}$  wt.%, since optimization of workable ranges is considered within the skill of the art.

Regarding claim 4, Derks discloses a cathode wherein the oxide particles of the alkaline earth oxide selected from the group formed by the oxides of calcium, strontium and barium are doped with an element selected from the group formed by scandium, yttrium and the lanthanoids in a quantity up to about 1wt.% (Column 1, lines 38-41). Derks fails to the doping elements selected from the group formed by scandium, yttrium and the lanthanoids in a quantity ranging from  $0.1 \times 10^{-6}$  to  $10 \times 10^{-6}$  wt.%. However, Derks acknowledges that for a smaller grain size it is sufficient to have smaller quantities of rare earth oxides (Column 1, lines 48-52), and furthermore, that optimum percentages by weight can be found for oxides of the rare earth metals at smaller grain sizes (Column 3, lines 34-41). It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide doping

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elements selected from the group formed by scandium, yttrium and the lanthanoids at a quantity ranging from  $0.10 \times 10^{-6}$  to  $10 \times 10^{-6}$  wt.%, since optimization of workable ranges is considered within the skill of the art.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Derks et al. (US 5,075,589) in view of Saito et al. (US 4,797,593).

Regarding claim 7, Derks discloses the claimed invention except for the limitation of the electron-emitting material comprises 1 to 3 wt.% particles of an activator metal selected from the group formed by Mg, Al, Fe, Si, Ti, Hf, Zr, W, Mo, Mn and Cr. However, in the same field of endeavor, Saito discloses a cathode for electron gun further comprising an activator metal selected from the group formed by Mg, Al, Fe, Si, Ti, Hf, Zr, W, Mo, Mn and Cr (Table II) which provides partial reduction of the oxide metal and thus activates the electron-emitting layer. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the activator metal disclosed by Saito in the cathode structure of Derks in order to obtain partial reduction of the oxide metal and thus activate the electron-emitting layer.

#### ***Allowable Subject Matter***

Claim 5, 6 and 8 is allowed over the prior art of record.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 5, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 5, and specifically comprising the limitation of the electron-emitting material is a stratified composite of at least a first and at least a second

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layer, said first layer comprising the oxide particles of the alkaline earth oxide selected from the group formed by the oxides of calcium, strontium and barium, and the oxide particles having the a first grain size distribution of the oxide selected from the group formed by the oxides of scandium, yttrium and the lanthanoids, and the second layer comprising the oxide particles of the alkaline earth oxide selected from the group formed by the oxides of calcium, strontium and barium, and the oxide particles having the second grain size distribution of the oxide selected from the group formed by the oxides of scandium, yttrium and the lanthanoids.

Regarding claim 6, claim 6 is allowable for the reasons given in claim 5 because of its dependency status from claim 5.

Regarding claim 8, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 8, and specifically comprising the limitation of the electron-emitting material comprises 1 to 3 wt.% particles of an activator metal selected from the group formed by Mg, Al, Fe, Si, Ti, Hf, W, Mo, Mn and Cr, which are coated with a metal selected from the group formed by Pd, Rh, Pt, Co, Ni, Ir and Re.

### ***Response to Arguments***

Applicant's arguments filed April 15, 2004 have been fully considered but they are not persuasive.

In regards to applicant's arguments that the Derks reference fails to disclose "a coating that comprises two different grain size distributions of oxides of scandium, yttrium and the lanthanoids", the Examiner respectfully disagrees. In column 2, lines 49-52, Derks discloses "Fig. 3 shows a similar dependence of the emission process on the added quantity of yttrium oxide, which consisted of grains **half** of which had a diameter of 0.9  $\mu\text{m}$  or less ( $d_{50}=0.9 \mu\text{m}$ )", accordingly, it is understood from Derks disclosure that the yttrium oxide added to the mixture

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contains two set of grain size distribution, a first a grain size distribution of 0.9  $\mu\text{m}$  or less encompassed by **half** of the grains and the rest of the grains exhibiting a second grain distribution.

For the reasons given above, the rejection of claims 1-4, 7 and 9 are deemed proper.


**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mariceli Santiago whose telephone number is (571) 272-2464. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

(WHS) 6/17/04  
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